

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff WSOU Investments, LLC d/b/a Brazos Licensing and Development (“Brazos” or “Plaintiff”), by and through its attorneys, files this Complaint for Patent Infringement against Google LLC (“Google”) and alleges:

NATURE OF THE ACTION

1. This is a civil action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. §§ 1, *et seq.*, including §§ 271, 281, 284, and 285.

THE PARTIES

2. Brazos is a limited liability corporation organized and existing under the laws of Delaware, with its principal place of business at 605 Austin Avenue, Suite 6, Waco, Texas 76701.

3. On information and belief, Google is a Delaware corporation with a physical address at 500 West 2nd Street, Austin, Texas 78701.

JURISDICTION AND VENUE

4. This is an action for patent infringement which arises under the Patent Laws of the United States, in particular, 35 U.S.C. §§ 271, 281, 284, and 285.

5. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has specific and general personal jurisdiction over the defendant pursuant to due process and/or the Texas Long Arm Statute, because the defendant has committed acts giving rise to this action within Texas and within this judicial district. The Court's exercise of jurisdiction over the defendant would not offend traditional notions of fair play and substantial justice because the defendant has established minimum contacts with the forum. For example, on information and belief, the defendant has committed acts of infringement in this judicial district, by among other things, selling and offering for sale products that infringe the asserted patent, directly or through intermediaries, as alleged herein.

7. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400(b). Google is registered to do business in Texas. Google has offices in this District, has transacted business in this District, and has committed acts of direct and indirect infringement in this District. Google also has a regular and established place of business in this District, as set forth below.

8. Since 2007, Google has employed “hundreds” of employees in this District in Austin, Texas.¹ As of August 2018, Google had more than 800 employees in Austin.² By June of 2019, Google had more than 1,100 employees in Austin.³ In January 2019, it was reported that Google “signed a lease for an entire 35-story tower that has started construction just east of the

¹ According to Gerardo Interiano, Google's public affairs and government relations manager, in a statement. See <http://www.statesman.com/business/google-lease-200-000-square-feet-new-downtown-austin-tower/SANZSa3du8QQ4k8ytOC2rJ/>

² See <https://www.statesman.com/news/20190131/source-google-to-occupy-35-story-office-tower-in-downtown-austin>

³ See <https://www.bizjournals.com/austin/news/2019/06/14/google-confirms-austin-expansion-will-begin-moving.html>

Central Library in downtown Austin.”⁴ Google’s 35-story tower in Austin “will have 790,000 square feet of space, enough to potentially house about 5,000 people.”⁵



Source: <https://www.statesman.com/news/20190131/source-google-to-occupy-35-story-office-tower-in-downtown-austin>

9. Articles report that Google’s office in Austin would “would certainly be one of its most expansive offices in North America.”⁶

10. Google has 300,000 square feet of office space in Austin, Texas, at 500 West 2nd Street.⁷ Google also has offices on North MoPac Expressway,⁸ University Park, and Austin’s Children Museum.⁹

⁴ *Id.*

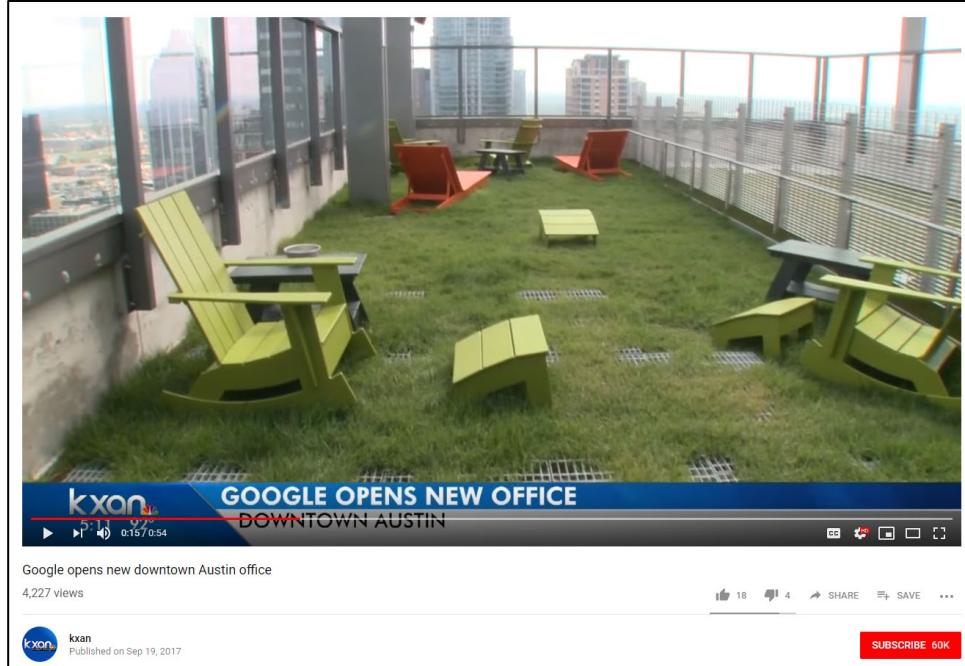
⁵ *Id.*

⁶ See <https://9to5google.com/2019/01/31/google-signs-lease-austin-campus/>

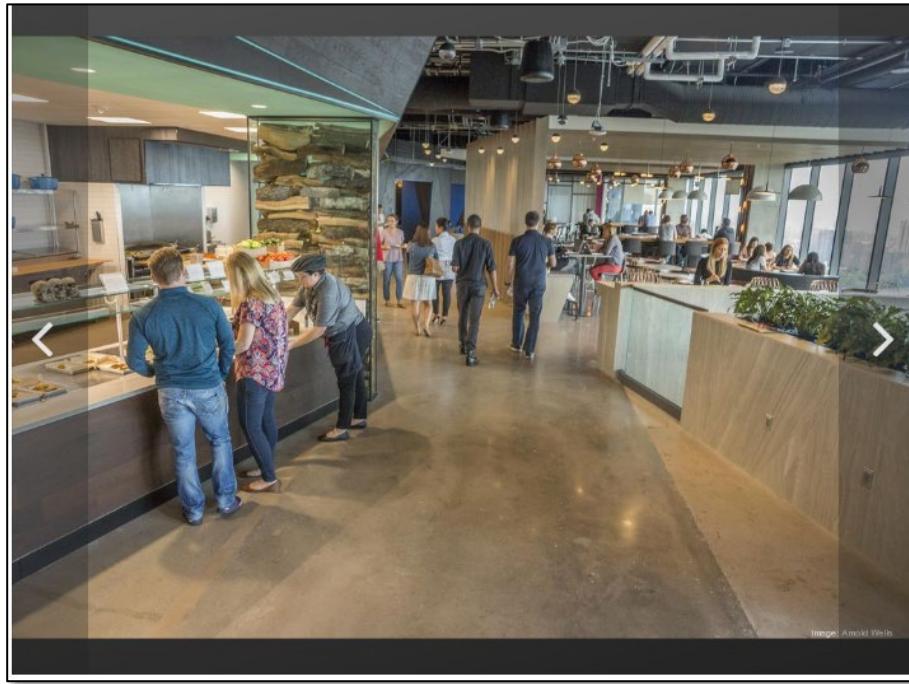
⁷ See <https://www.bizjournals.com/austin/news/2020/02/27/google-to-invest-10b-in-offices-and-data-centers.html>

⁸ See <https://www.google.com/intl/en/about/locations/?region=north-america>

⁹ See <http://www.statesman.com/business/google-lease-200-000-square-feet-new-downtown-austin-tower/SANZSa3du8QQ4k8ytOC2rJ/>



Source: <https://www.youtube.com/watch?v=RKA1RJYGOYQ>



Source: <https://www.bizjournals.com/austin/news/2019/10/28/inside-austins-coolest-offices.html#g/419929/15>

11. Google has, as of June 2020, fifty (50) job postings for Austin, TX.¹⁰

12. Google's taxed appraised property values in Travis County (Austin) are approximately \$1 billion.¹¹ Google's taxed appraised property values in McLennan County (Waco) are approximately \$75,000.¹² Google's taxed appraised property values in Bexar County (San Antonio) are approximately \$50 million.¹³ Google's taxed appraised property values in El Paso are approximately \$258,000.¹⁴

13. Operationally, Google is a multinational technology company that collects, stores, organizes, and distributes data. In addition to its service model for distribution of data (e.g., movies, search results, maps, music, etc.), Google has an expansive regime that gathers data on residents of this District through the hardware devices it sells (e.g., phones, tablets, and home audio devices) and, also, through the operating systems and apps it provides. As an example, Google gathers data when a resident runs its operating systems and apps (e.g., location services).¹⁵ As another example, Google gathers data when a resident interacts with Google's plethora of services such as search, email, and music and movie streaming. See <https://safety.google/privacy/data/> (indicating that Google gathers data from "things you search for," "Videos you watch," "Ads you view or click," "Your location," "Websites you visit," and "Apps, browsers, and devices you use to access Google services"). As yet another example, Google gathers data by listening and recording everything a resident says within proximity of one of its products, such as Google

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<https://careers.google.com/jobs/results/?company=Google&company=YouTube&hl=en&jlo=en-US&location=Austin,%20TX,%20USA>

¹¹ See <http://propaccess.traviscad.org>

¹² See https://propaccess.trueautomation.com/clientdb/Property.aspx?cid=20&prop_id=378970

¹³ See https://bexar.acttax.com/act_webdev/bexar/showdetail2.jsp?can=000001265355,

¹⁴ See <http://www.epcad.org/Search?Keywords=GOOGLE+INC&Year=2019>

¹⁵ See e.g., "AP Exclusive: Google tracks your movements, like it or not,"

<https://apnews.com/828aefab64d4411bac257a07c1af0ecb/AP-Exclusive:-Google-tracks-your-movements,-like-it-or-not>

Home.¹⁶ Others have reported that Google gathers “where you’ve been,” “everything you’ve ever searched – and deleted,” “all the apps you use,” “all of your YouTube history,” “which events you attended, and when,” “information you deleted [on your computer],” “your workout routine,” “years’ worth of photos,” and “every email you ever sent.”¹⁷

14. Google takes these massive amounts of gathered data on residents of this District and monetizes them, for example, through targeted advertising. Some have reported that “creepy” advertisements for items never searched for, but only spoken out loud, appeared. *See e.g.*, <https://www.youtube.com/watch?v=zBnDWSvaQ1I> (conducting test on the term “dog toys” spoken out loud, but never searched; tester claims targeted “dog toy” advertisements only appeared after speaking the phrase out loud).

15. In addition to extensive data gathering of information on residents of this District, Google has a substantial presence in the District directly through the products and services Google provides residents of this District (some of which also gather data).¹⁸ One of Google’s main businesses in this District is delivering information, including digital content such as movies, music, apps, and advertising.

¹⁶ See <https://www.unilad.co.uk/technology/google-is-listening-to-everything-we-say-and-you-can-hear-it-back/> (“Tech giant and the font of all pub quiz knowledge, Google, can quietly record many of the conversations that people have in close proximity to its products.”).

¹⁷ See <https://www.theguardian.com/commentisfree/2018/mar/28/all-the-data-facebook-google-has-on-you-privacy>.

¹⁸ Non-limiting examples include Google Search, Maps, Translate, Chrome Browser, YouTube, YouTube TV, Google Play Music, Chromecast, Google Play Movies and TV, Android Phones, Android Wear, Chromebooks, Android Auto, Gmail, Google Allo, Google Duo, Google+, Google Photos, Google Contacts, Google Calendar, Google Keep, Google Docs, Google Sheets, Google Slides, Google Drive, Google Voice, Google Assistant, Android operating system, Project Fi Wireless phone systems, Google Pixel, Google Home, Google Wifi, Daydream View, Chromecast Ultra.

16. Google describes itself as an “information company.”¹⁹ Its vision is “to provide access to the world’s information in one click,” and its mission is “to organize the world’s information and make it universally accessible and useful.”²⁰ Making information available to people wherever they are and as quickly as possible is critical to Google’s business.

Google Global Cache (GGC)

17. As Google’s CEO, Sundar Pichai, explains, “We want to make sure that no matter who you are or where you are or how advanced the device you are using—Google works for you.”²¹ To meet this goal, Google developed a content delivery network that it calls the Edge Network.

18. One non-limiting example of physical presence in this District is Google’s Edge Network. Google provides web-based services, such as YouTube, YouTube TV, and Google Play, to users throughout the world. These services are in high demand. Google reports that Google Play reaches more than 1 billion Android users and that YouTube serves over 1.8 billion users per month.²² Studies show that YouTube alone is responsible for approximately 20% of all internet traffic.²³ YouTube TV, which has been described as an “add-on to YouTube” allows Google to essentially become the local TV provider for residents of this District. For example, residents in this District obtain local Waco-Temple-Bryan area channels such as KXXV, ABC (Channel 25); KBTX, CBS (Channel 3) or KWTX, CBS (Channel 10); KCEN NBC (Channel 5); and KCEN,

¹⁹ See “This Year’s Founder’s Letter” by Alphabet CEO, Sundar Pichai, <https://blog.google/inside-google/alphabet/this-years-founders-letter/>.

²⁰ See <http://panmore.com/google-vision-statement-mission-statement>.

²¹ See e.g., <http://time.com/4311233/google-ceo-sundar-pichai-letter/>.

²² See <https://www.theverge.com/2018/5/3/17317274/youtube-1-8-billion-logged-in-monthly-users-brandcast-2018>

²³ See <https://www.sandvine.com/hubfs/downloads/archive/2016-global-internet-phenomena-report-latin-america-and-north-america.pdf> and <http://testinternetspeed.org/blog/half-of-all-internet-traffic-goes-to-netflix-and-youtube/>

Fox (Channel 6).²⁴ To verify a resident should receive such local channels, Google verifies a location of such resident.

19. Google's Edge Network, itself, has three elements: Core Data Centers, Edge Points of Presence, and Edge Nodes. The Core Data Centers (there are eight in the United States) are used for computation and backend storage. Edge Points of Presence are the middle tier of the Edge Network and connect the Data Centers to the internet. Edge Nodes are the layer of the network closest to users. Popular content, including YouTube TV, YouTube, video advertising, music, mobile apps, and other digital content from the Google Play store, is cached on the Edge Nodes, which Google refers to as Google Global Cache or "GGC."

20. Google Global Cache is recognized as "one of Google's most important pieces of infrastructure,"²⁵ and Google uses it to conduct the business of providing access to the world's information. GGC servers in the Edge Nodes function as local data warehouses, much like a shoe manufacturer might have warehouses around the country. Instead of requiring people to obtain information from distant Core Data Centers, which would introduce delay, Google stores information in the local GGC servers to provide quick access to the data.

21. Caching and localization are vital for Google's optimization of network resources. Because hosting all content everywhere is inefficient, it makes sense to cache popular content and serve it locally. Doing so brings delivery costs down for Google, network operators, and internet service providers. Storing content locally also allows it to be delivered more quickly, which improves user experience. Serving content from the edge of the network closer to the user improves performance and user happiness. To achieve these benefits, Google has placed Edge Nodes

²⁴ See, e.g. <https://thestreamable.com/markets/waco-temple-bryan-tx>.

²⁵ See <http://blog.speedchecker.xyz/2015/11/30/demystifying-google-global-cache/>.

throughout the United States, including in this District. Google describes these nodes as the workhorses of video delivery.

22. Just like brick-and-mortar stores, Google’s GGC servers independently determine what content to cache based on local requests. The GGC servers in Google’s Edge Nodes include software that Google refers to as “ μ streamer.” μ streamer is responsible for serving video content from YouTube and other Google services, along with other large content such as Google Play applications and Chrome downloads. It operates on a content-delivery platform at the edge of Google’s network called “bandaid”; it does not run in the core (except for some internal testing purposes), unlike the majority of the Google services, such as search or gmail.

23. Using μ streamer and bandaid, a GGC server handles requests directly from its clients, predominantly YouTube’s video players. When such a request is received, if the content is stored in the node’s local cache, the node will serve it to the end user, improving the user experience and saving bandwidth. If cache-eligible content is not already stored on the node, and the content is cache-eligible, the node will retrieve it from Google, serve it to the user, and store it for future requests.

24. μ streamer is largely autonomous, in the sense that almost all decisions related to serving a particular request are made locally, without coordinating with other servers. Like a brick-and-mortar store sells directly to customers from inventory and stocks that inventory based on local customer demand, μ streamer in each GGC node decides—Independently from other nodes in Google’s Edge Network—whether to serve requested content, whether to cache content, and whether to send requests to other servers.

25. Google’s GGC servers are housed in spaces in the District leased by Google. Google’s GGC servers are housed in spaces leased by Google from Internet Service Providers

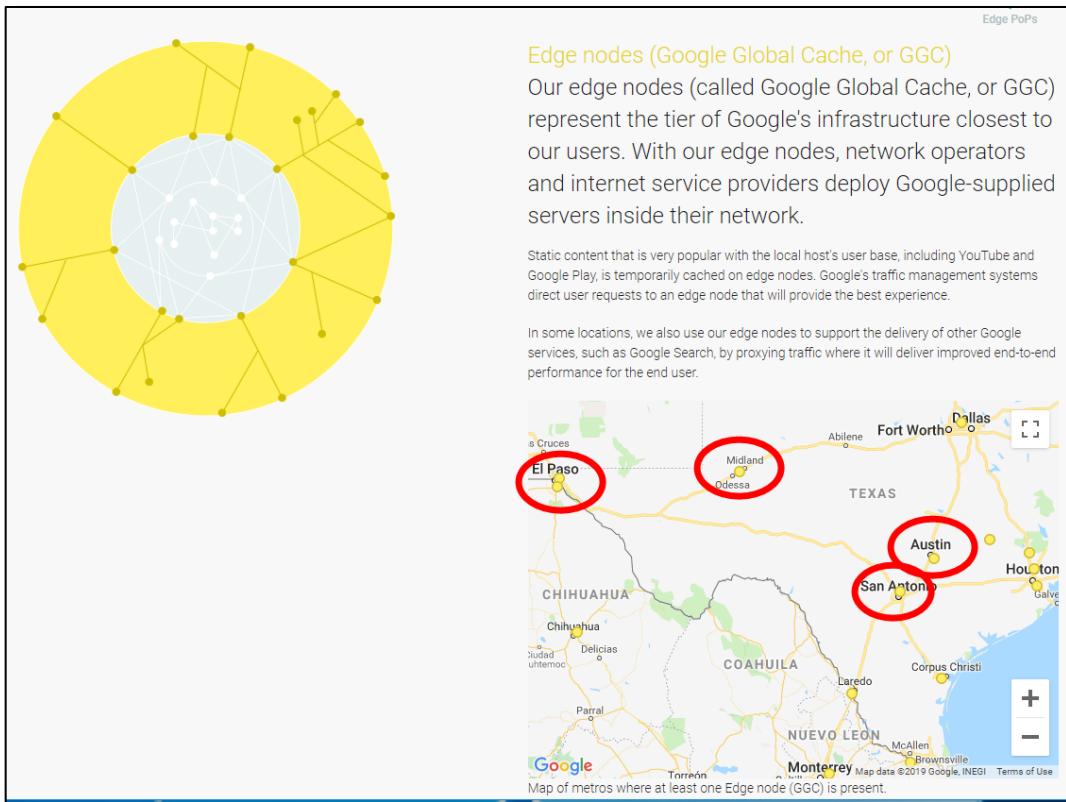
(ISPs) whose networks have substantial traffic to Google and are interested in saving bandwidth. Hosting Google servers allows ISPs to save both bandwidth and costs, as they do not incur the expense of carrying traffic across their peering and/or transit links.

26. When an ISP agrees to host a GGC server, the parties enter into a Global Cache Service Agreement, under which Google provides:

- hardware and software—including GGC servers and software—to be housed in the host's facilities;
- technical support; service management of the hardware and software; and
- content distribution services, including content caching and video streaming.

In exchange, the host provides, among other things, a physical building, rack space where Google's computer hardware is mounted, power, and network interfaces. All ownership rights, title, and intellectual property rights in and to the equipment (i.e., the hardware and software provided by Google) remain with Google and/or its licensors.

27. Multiple ISP hosted GGC servers are in this District. Google's website identifies Midland, El Paso, Austin, and San Antonio as GGC server locations. Each of these cities is located in this District.



Source: <https://peering.google.com/#/infrastructure>

28. The Office of Telecommunications Services for the University of Texas, for example, is an ISP that hosts two GGC servers in Austin, Texas.²⁶
29. Google caches content on the GGC servers located in this District.
30. Google's GGC servers located in this District cache content that includes, among other things: (i) video advertising; (ii) apps; and (iii) digital content from the Google Play store.
31. Google's GGC servers located in this District deliver cached content for the items in the preceding paragraph to residents in this District.
32. Google generates revenue (i) by delivering video advertising, (ii) from apps, and (iii) from digital content in the Google Play store.

²⁶ See <https://it.utexas.edu/ots-caching-and-peering>

33. Google treats its GGC servers in this District the same as it treats all of its other GGC servers in the United States.

34. The photograph below shows an “illustrative picture” of a Google GGC server.

Google Global Cache 

Motivation

- Explosion of broadband access and rich, multimedia content continues to drive demand on Internet backbone networks
- This increases the cost of Internet Service Providers (network upgrades, transit costs, etc..)

Google Global Cache

- Allows Large ISP to serve content from the edge of their own network.
- Eases backbone congestion on the service provider's network well as traffic on peering and transit links
- Saves money and improves users' experience accessing Google services.
- GGC can be also deployed in IXPs, to server content to participants, locally!



(Illustrative picture)

Source: <https://www.wired.com/2010/03/google-traffic/>

35. Google not only exercises exclusive control over the digital aspects of the GGC, Google, but also exercises exclusive control over the physical server and the physical space within which the server is located and maintained.

Google's Communication Services

36. Google provides both data and television services to both San Antonio and Austin.²⁷

²⁷ <https://fiber.google.com/ourcities/>

[Google Fiber](#) [Austin](#) [Internet Plans](#) [TV Channels](#) [Events](#) [Find a Store](#) [Support](#)

[CHECK ELIGIBILITY](#)  [Sign In](#)

Fiber 1000 + TV and Fiber 100 + TV
Fiber 1000 + TV and Fiber 100 + TV include a full line-up of your favorite channels in crystal clear HD including local, sports, news and weather, entertainment, lifestyle, children and more.

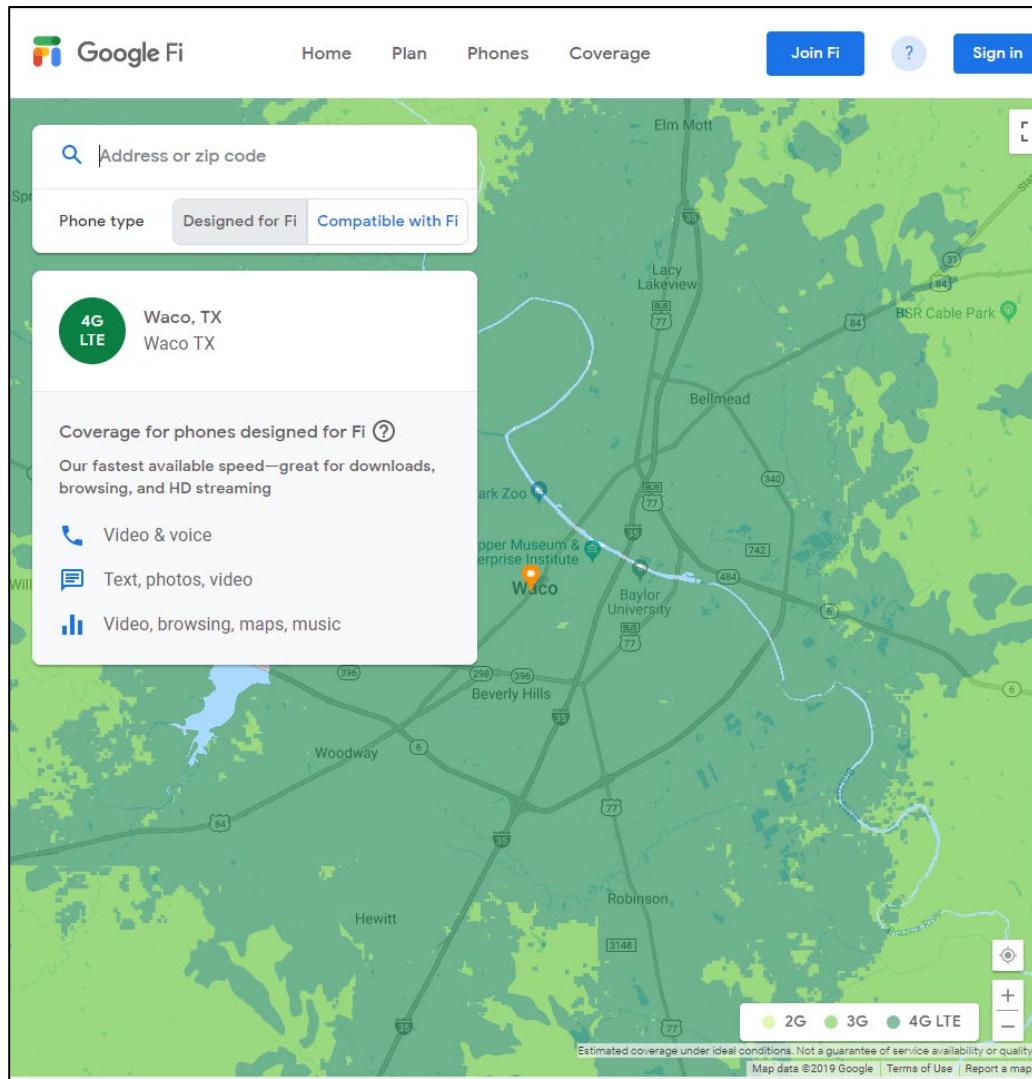
[PRINTABLE CHANNEL GUIDE](#)

Filter [ALL CHANNELS](#)

					
AUSCC (Austin Community College)	AISDST (Austin Independent School District)	PUAC010 (Austin Public 10)	PUAC011 (Austin Public 11)	PUAC016 (Austin Public 16)	

Google's Cell Phone Service (aka Google Fi)

37. Google also provides phone, messaging, and data services in this District from its wireless phone services called Google Fi. Via the Google Fi service, Google provides its customers voice and high-speed data coverage (4G LTE) for cities such as Waco.



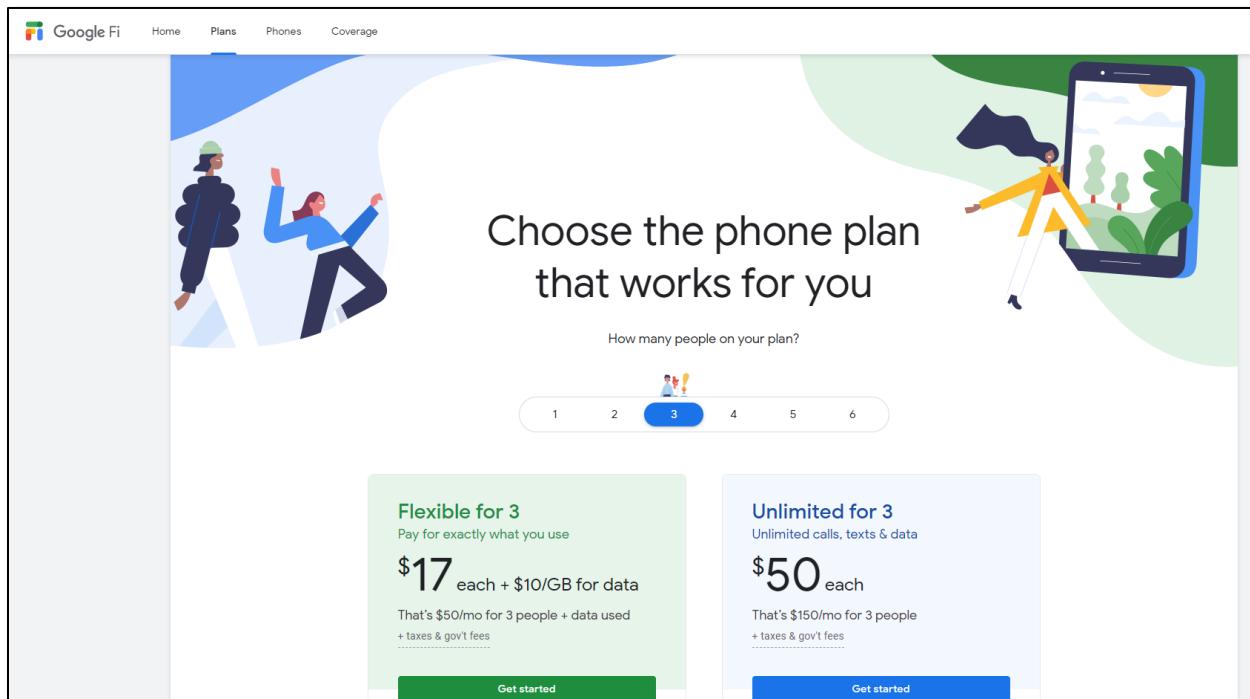
Source: <https://fi.google.com/coverage?q=Waco,%20tx>

38. The cell towers used for Google's services are fixed geographical locations. They are "regular" and "established" because they operate in a "steady, uniform, orderly, and methodical manner" and are sufficiently permanent. They are "of the defendant" because Google has contractual and/or property rights to use the cell towers to operate its business. Google also ratifies the service locations through its coverage lookup service.

39. With this coverage lookup service, Google advertises its ability to provide cell coverage in this District and its selected cell towers in and near this District to provide the

advertised coverage (e.g., 2G, 3G, or 4GLTE) depending on the location in the District. See <https://fi.google.com/coverage?>. Google is not indifferent to the location of its cell towers. It “established” and “ratified” their geographic placement to achieve specific business purposes.

40. Residents of this District also directly contract with and are billed by Google for these services as their telecommunications provider.



Source: <https://fi.google.com/about/plan>

41. Google also determines which cell tower a particular Google Fi customer will use while within the District.

⌄ What determines when Project Fi moves me between cellular networks?

When multiple carriers are available, Project Fi will move you to the network that our analysis shows will be fastest in your current location, whether that is 4G LTE, 3G, or 2G. We're constantly learning and improving, to account for factors such as newly-built towers or newly-available radio frequencies. And if your current network is providing weak or no coverage, we'll adjust in real time to find you a stronger connection.

Source: <https://fi.google.com/about/faq/#network-and-coverage-4>

COUNT ONE - INFRINGEMENT OF U.S. PATENT NO. 7,777,728

42. Brazos re-alleges and incorporates by reference the preceding paragraphs of this Complaint.

43. On August 17, 2010, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,777,728 (“the ‘728 Patent”), entitled “Mobile communication terminal.” A true and correct copy of the ‘728 Patent is attached as Exhibit A to this Complaint.

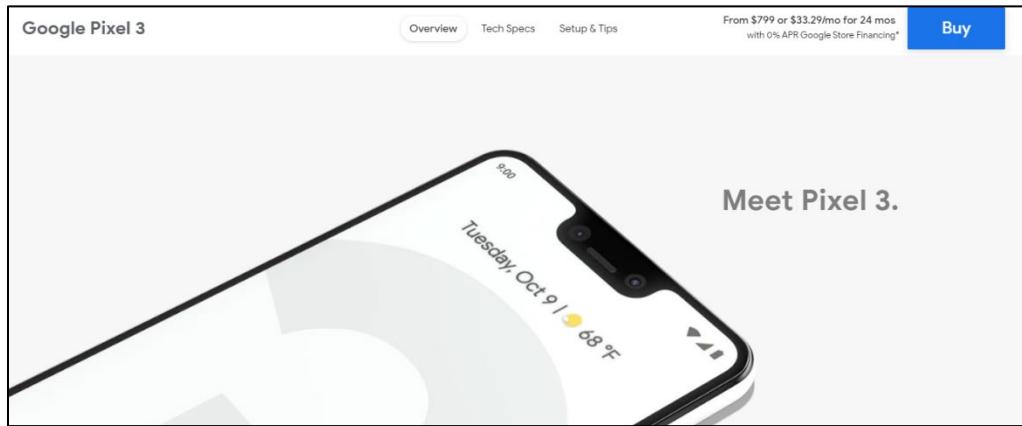
44. Brazos is the owner of all rights, title, and interest in and to the ‘728 Patent, including the right to assert all causes of action arising under the ‘728 Patent and the right to any remedies for the infringement of the ‘728 Patent.

45. Google makes, uses, sells, offers for sale, imports, and/or distributes in the United States, including within this judicial district, products such as, but not limited to, Gboard and associated Google devices that utilize Gboard (collectively, the “Accused Products”).

46. The Accused Products include, but are not limited to, devices that utilize Gboard – including those on the iOS and Android platforms. According to Google, on the Android platform alone, Gboard has been installed on more than one billion devices.

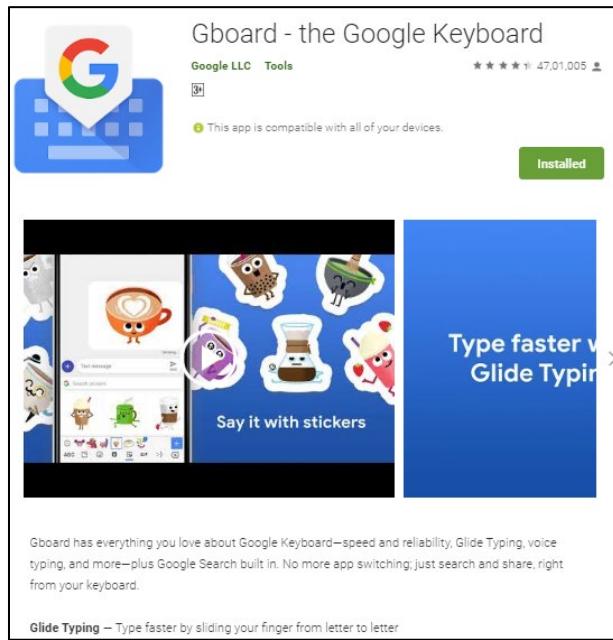
47. Amongst the Accused products are Google’s own brand of device referred to under the brand name “Pixel.” Google Pixel is a brand of consumer electronic devices developed by Google that runs either Chrome OS or the Android operating system having a controller and a memory storing executable instructions. The Pixel brand was introduced in February 2013 with the first-generation Chromebook Pixel. The Pixel line includes laptops, tablets, and smartphones,

as well as several accessories. One non-limiting example Google Pixel device is a Pixel 3, which came pre-installed with the Gboard.

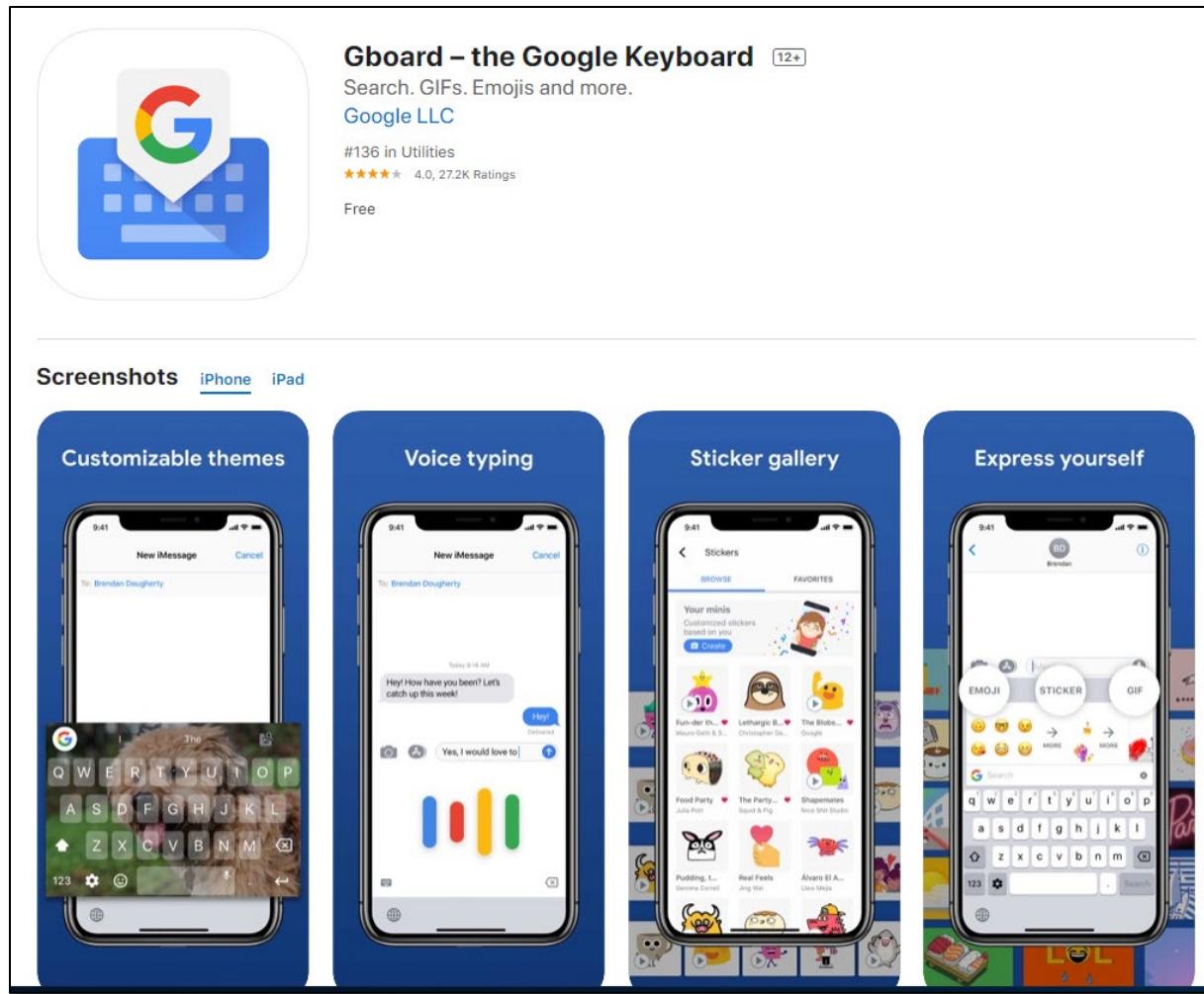


Source: https://store.google.com/US/product/pixel_3,

48. Gboard is a virtual keyboard that provides a feature of Glide typing in the Accused Instrumentalities. Users can type by gliding the fingers on the display of the device in which Gboard is installed.



Source:
https://play.google.com/store/apps/details?id=com.google.android.inputmethod.latin&hl=en_US,



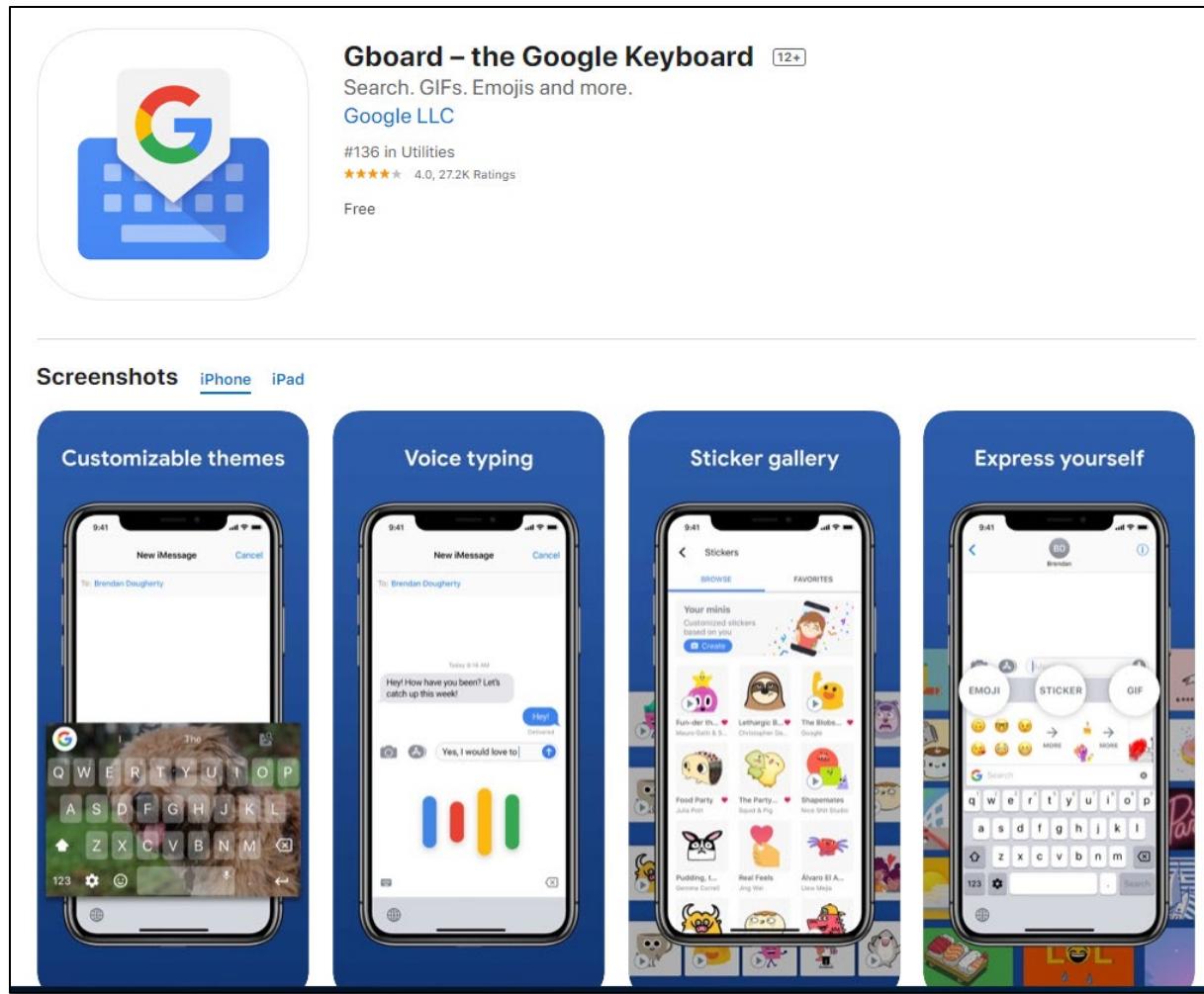
Source: <https://apps.apple.com/us/app/gboard-the-google-keyboard/id1091700242>

49. Gboard is a virtual keyboard that provides a feature of Glide typing in the Accused Instrumentalities. Users can type by gliding the fingers on the display of the device in which Gboard is installed.



Source:

https://play.google.com/store/apps/details?id=com.google.android.inputmethod.latin&hl=en_US,

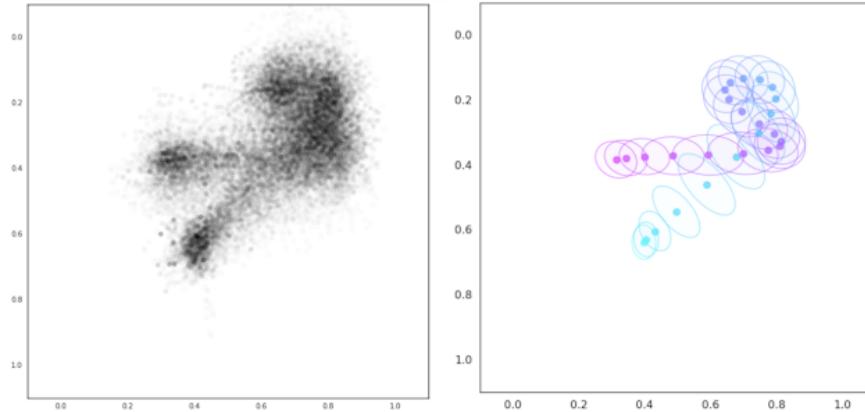


Source: <https://apps.apple.com/us/app/gboard-the-google-keyboard/id1091700242>

50. As another example, the diagram shows the trajectory for the word “Cloud” on Gboard. The trajectory is shown as the normalized sampled trajectory with a pre-sample variance (image in the right). The pre-sample variance highlights the area (i.e. candidate area) considered during different touchpoints as the user glides on the display. As the user glides for the word “Cloud” the area considered for the words is dependent on the trajectory of the glide (i.e. between

the first point in the trajectory for the alphabet “C” and the second position in the trajectory for the alphabet “L” for the word “Cloud”).

However, training this model turned out to be a lot more complicated than we had anticipated. While acoustic models are trained from human-transcribed audio data, one cannot easily transcribe millions of touch point sequences and glide traces. So the team exploited user-interaction signals, e.g. reverted auto-corrections and suggestion picks as negative and positive semi-supervised learning signals, to form rich training and test sets.

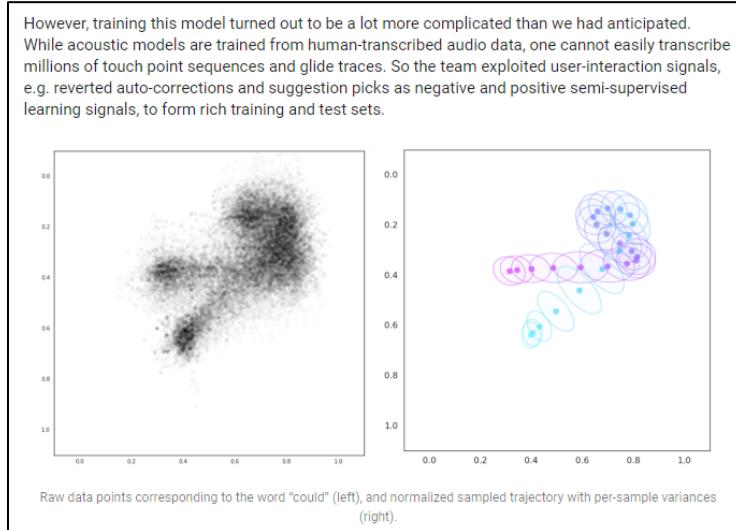


Raw data points corresponding to the word “could” (left), and normalized sampled trajectory with per-sample variances (right).

Source: <https://ai.googleblog.com/2017/05/the-machine-intelligence-behind-gboard.html>

51. As an example, the trajectory followed for the word “Cloud,” a plurality of candidate characters are disposed within the area for the trajectory. These candidate characters

falling under the area (image in the right) are considered as the alphabets (i.e. candidate characters) while gliding on the display of the device.



Source: <https://ai.googleblog.com/2017/05/the-machine-intelligence-behind-gboard.html>

52. Gboard creates robust spatial models that map fuzzy sequences of raw touchpoints to keys on the keyboard. It then builds a powerful core decoding engine based on finite-state transducers (FST) to determine the likeliest word sequence given an input touch sequence from the area (i.e. candidate area) for the trajectory of a word.

With the realization that the way a mobile keyboard translates touch inputs into text is similar to how a speech recognition system translates voice inputs into text, we leveraged our experience in Speech Recognition to pursue our vision. First, we created robust spatial models that map fuzzy sequences of raw touch points to keys on the keyboard, just like acoustic models map sequences of sound bites to phonetic units. Second, we built a powerful core decoding engine based on **finite state transducers** (FST) to determine the likeliest word sequence given an input touch sequence. With its mathematical formalism and broad success in speech applications, we knew that an FST decoder would offer the flexibility needed to support a variety of complex keyboard input behaviors as well as language features. In this post, we will detail what went into the development of both of these systems.

Source: <https://ai.googleblog.com/2017/05/the-machine-intelligence-behind-gboard.html>,

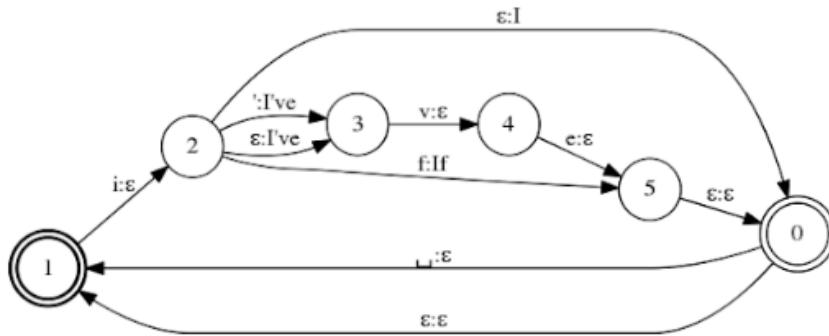
53. While the Neural spatial models use spatial information to help determine what was tapped or swiped, there are additional constraints — lexical and grammatical — that can be brought

to bear. A lexicon tells the Gboard what words occur in a language and a probabilistic grammar tells the Gboard what words are likely to follow other words. To encode this information, Gboard uses finite-state transducers.

Finite-State Transducers

While the NSM uses spatial information to help determine what was tapped or swiped, there are additional constraints – *lexical* and *grammatical* – that can be brought to bear. A lexicon tells us what words occur in a language and a probabilistic grammar tells us what words are likely to follow other words. To encode this information we use finite-state transducers. FSTs have long been a key component of Google's speech recognition and synthesis systems. They provide a principled way to represent various probabilistic models (lexicons, grammars, normalizers, etc) used in natural language processing together with the mathematical framework needed to manipulate, optimize, combine and search the models*.

In Gboard, a key-to-word transducer compactly represents the keyboard lexicon as shown in the figure below. It encodes the mapping from key sequences to words, allowing for alternative key sequences and optional spaces.



This transducer encodes "I", "I've", "If" along paths from the start state (the bold circle 1) to final states (the double circle 0 and 1). Each arc is labeled with an input key (before the ".") and a corresponding output word (after the ".") where ϵ encodes the empty symbol. The apostrophe in "I've" can be omitted. The user may skip the space bar sometimes. To account for that, the space key transition between words in the transducer is optional. The ϵ and space back arcs allow accepting more than one word.

Source: <https://ai.googleblog.com/2017/05/the-machine-intelligence-behind-gboard.html>

54. A probabilistic n-gram transducer is used to represent the language model for the keyboard. A state in the model represents an (up to) n-1-word context and an arc leaving that state is labeled with a successor word together with its probability of following that context (estimated

from textual data). These, together with the spatial model, gives the likelihoods of sequences of key touches (discrete tap entries or continuous gestures in glide typing).

A probabilistic n-gram transducer is used to represent the language model for the keyboard. A state in the model represents an (up to) n-1 word context and an arc leaving that state is labeled with a successor word together with its probability of following that context (estimated from textual data). These, together with the spatial model that gives the likelihoods of sequences of key touches (discrete tap entries or continuous gestures in glide typing), are combined and explored with a beam search.

Generic FST principles, such as streaming, support for dynamic models, etc took us a long way towards building a new keyboard decoder, but several new functionalities also had to be added. When you speak, you don't need the decoder to complete your words or guess what you will say next to save you a few syllables; but when you type, you appreciate the help of word completions and predictions. Also, we wanted the keyboard to provide seamless multilingual support, as shown below.

Source: <https://ai.googleblog.com/2017/05/the-machine-intelligence-behind-gboard.html>

55. In view of preceding paragraphs, each and every element of at least claim 16 of the ‘728 Patent is found in the Accused Products.

56. Google continues to directly infringe at least one claim of the ‘728 Patent, literally or under the doctrine of equivalents, by making, using, selling, offering for sale, importing, and/or distributing the Accused Products in the United States, including within this judicial district, without the authority of Brazos.

57. Google has received notice and actual or constructive knowledge of the ‘728 Patent since at least the date of service of this Complaint.

58. Since at least the date of service of this Complaint, through its actions, Google has actively induced product makers, distributors, retailers, and/or end users of the Accused Products to infringe the ‘728 Patent throughout the United States, including within this judicial district, by, among other things, advertising and promoting the use of the Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and

other instructions on how to implement and configure the Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- https://store.google.com/US/product/pixel_3
- <https://www.youtube.com/watch?v=KAW0iTfnv5A>
- https://play.google.com/store/apps/details?id=com.google.android.inputmethod.latin&hl=en_US
- <https://ai.googleblog.com/2017/05/the-machine-intelligence-behind-gboard.html>

59. Since at least the date of service of this Complaint, through its actions, Google has contributed to the infringement of the ‘728 Patent by having others sell, offer for sale, or use the Accused Products throughout the United States, including within this judicial district, with knowledge that the Accused Products infringe the ‘728 Patent. The Accused Products are especially made or adapted for infringing the ‘728 Patent and have no substantial non-infringing use. For example, in view of the preceding paragraphs, the Accused Products contain functionality which is material to at least one claim of the ‘728 Patent.

JURY DEMAND

Brazos hereby demands a jury on all issues so triable.

REQUEST FOR RELIEF

WHEREFORE, Brazos respectfully requests that the Court:

- (A) Enter judgment that Google infringes one or more claims of the ‘728 Patent literally and/or under the doctrine of equivalents;
- (B) Enter judgment that Google has induced infringement and continue to induce infringement of one or more claims of the ‘728 Patent;

- (C) Enter judgment that Google has contributed to and continue to contribute to the infringement of one or more claims of the ‘728 Patent;
- (D) Award Brazos damages, to be paid by Google in an amount adequate to compensate Brazos for such damages, together with pre-judgment and post-judgment interest for the infringement by Google of the ‘728 Patent through the date such judgment is entered in accordance with 35 U.S.C. § 284, and increase such award by up to three times the amount found or assessed in accordance with 35 U.S.C. § 284;
- (E) Declare this case exceptional pursuant to 35 U.S.C. § 285; and
- (F) Award Brazos its costs, disbursements, attorneys’ fees, and such further and additional relief as is deemed appropriate by this Court.

Dated: June 29, 2020

Respectfully submitted,

/s/ James L. Etheridge
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